

L8 ANSWER 1 OF 3 CAPLUS COPYRIGHT 2008 ACS on STN  
AN 2004:623150 CAPLUS  
DN 141:315492  
ED Entered STN: 08 Oct 2004  
TI Achromatic pigment-containing chromatic color sheets with no cracks caused by drying nor color fading  
IN Yoshida, Tetsuya; Okuda, Yuka; Nakayama, Shinichi; Kakuta, Yuko; Watanabe, Junji  
PA Soken Chemical and Engineering Co., Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 15 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
IC ICM B32B027-18  
CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 56, 57, 74  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004276492	A	20041007	JP 2003-73123	20030318 <--
PRAI	JP 2003-73123			20030318 <--	

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2004276492	ICM	B32B027-18
	IPCI	B32B0027-18 [ICM, 7]
	IPCR	B32B0027-18 [I, A]; B32B0027-18 [I, C,*]
	FTERM	4F100/AA01C; 4F100/AA19C; 4F100/AA21C; 4F100/AB03A; 4F100/AB04A; 4F100/AB10A; 4F100/AB31A; 4F100/AD00A; 4F100/AE01A; 4F100/AG00A; 4F100/AK01C; 4F100/AK12C; 4F100/AK17A; 4F100/AK17C; 4F100/AK25C; 4F100/AK48; 4F100/AK48A; 4F100/AL01C; 4F100/AL05C; 4F100/AL06C; 4F100/AP00A; 4F100/AS00C; 4F100/AT00A; 4F100/BA03; 4F100/BA07; 4F100/BA10A; 4F100/BA10C; 4F100/CA20C; 4F100/DC11B; 4F100/DC16A; 4F100/DE01C; 4F100/DG10A; 4F100/DG11A; 4F100/EH46; 4F100/EH462; 4F100/EJ86; 4F100/EJ862; 4F100/GB08; 4F100/GB41; 4F100/GE71; 4F100/GB90; 4F100/JB08C; 4F100/JB09C; 4F100/JK14; 4F100/JL09; 4F100/JL10A; 4F100/JN06C; 4F100/JN28A; 4F100/JN28C; 4F100/YY00C

AB The sheets comprise flat base sheets and colorant support sheets (e.g., meshes, photoimaging materials) thereon having grooves patterned in plane regularly or irregularly and at high-d. In the grooves, (monodisperse) (in)organic spherical particles having volume-average diameter (d) 100-500 nm

and

showing achromatic gray, black, or sepia black color are regularly arranged in longitudinal and lateral directions to give particle laminates, which are bonded on the base sheets by resin binders to show chromatic perpendicular reflection color (e.g., violet, blue, green, yellow, or red) as structural color under visible light irradiation. The base sheets may be adhesive sheets for laminating on (stainless) steel, Al (alloy), ceramic, etc.

ST achromatic pigment chromatic color sheet crack free; acrylic spherical black pigment chromatic nylon sheet; glass stainless photoimaging material sheet achromatic pigment; patterned groove monodisperse pigment particle color sheet

IT Pigments, nonbiological

(achromatic pigment-containing chromatic color sheets with no cracks caused by drying nor color fading)

IT Fluoropolymers, uses

RL: TEM (Technical or engineered material use); USES (Uses)  
(acrylic, colorant particles; achromatic pigment-containing chromatic color sheets with no cracks caused by drying nor color fading)

IT Ceramics  
Mortar  
Paper  
Textiles  
Wood  
(adherends; achromatic pigment-containing chromatic color sheets with no cracks caused by drying nor color fading)

IT Plastics, miscellaneous  
RL: MSC (Miscellaneous)  
(adherends; achromatic pigment-containing chromatic color sheets with no cracks caused by drying nor color fading)

IT Polyamides, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(base sheets; meshed colorant supports; achromatic pigment-containing chromatic color sheets with no cracks caused by drying nor color fading)

IT Glass, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(base sheets; achromatic pigment-containing chromatic color sheets with no cracks caused by drying nor color fading)

IT Acrylic polymers, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(colorant particles; achromatic pigment-containing chromatic color sheets with no cracks caused by drying nor color fading)

IT Photoimaging materials  
(colorant supports; achromatic pigment-containing chromatic color sheets with no cracks caused by drying nor color fading)

IT Fluoropolymers, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(colorant supports; achromatic pigment-containing chromatic color sheets with no cracks caused by drying nor color fading)

IT Acrylic polymers, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(fluorine-containing, colorant particles; achromatic pigment-containing chromatic color sheets with no cracks caused by drying nor color fading)

IT Polymers, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(oil-soluble, binders; achromatic pigment-containing chromatic color sheets with no cracks caused by drying nor color fading)

IT Adhesives  
Colored materials  
(sheets; achromatic pigment-containing chromatic color sheets with no cracks caused by drying nor color fading)

IT Polymers, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(water-soluble, binders; achromatic pigment-containing chromatic color sheets with no cracks caused by drying nor color fading)

IT Aluminum alloy, base  
RL: MSC (Miscellaneous)  
(adherends; achromatic pigment-containing chromatic color sheets with no cracks caused by drying nor color fading)

IT 7429-90-5, Aluminum, miscellaneous 12597-69-2, Steel, miscellaneous  
RL: MSC (Miscellaneous)  
(adherends; achromatic pigment-containing chromatic color sheets with no cracks caused by drying nor color fading)

IT 9011-14-7P, Methyl methacrylate homopolymer 25776-83-4P, Ethylene glycol dimethacrylate-2-hydroxyethyl methacrylate-methyl methacrylate copolymer  
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(colorant particles; achromatic pigment-containing chromatic color sheets with no cracks caused by drying nor color fading)

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 12237-22-8, C.I.

Solvent Black 27 13463-67-7, Titania, uses 52337-09-4, Titania-silica  
159995-97-8, Aluminum silicon oxide  
RL: TEM (Technical or engineered material use); USES (Uses)  
(colorant particles; achromatic pigment-containing chromatic color sheets  
with no cracks caused by drying nor color fading)  
IT 12597-68-1, Stainless steel, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(meshed, colorant supports; achromatic pigment-containing chromatic color  
sheets with no cracks caused by drying nor color fading)  
RN 7429-90-5  
RN 12597-69-2  
RN 9011-14-7P  
RN 25776-83-4P  
RN 1344-28-1  
RN 7631-86-9  
RN 12237-22-8  
RN 13463-67-7  
RN 52337-09-4  
RN 159995-97-8  
RN 12597-68-1  
  
L8 ANSWER 2 OF 3 WPIX COPYRIGHT 2008 THOMSON REUTERS on STN  
AN 2004-731339 [72] WPIX  
DNC C2004-257083 [72]  
DNN N2004-579241 [72]  
TI Color sheet for internal equipment building materials, has particle form  
laminate containing organic or inorganic ball-shaped particle of black  
group achromatic color adhered on substrate sheet with resin binder  
DC A82; G02; L03; P73  
IN NAKAYAMA S; OKUDA Y; TSUNODA Y; WATANABE J; YOSHIDA T  
PA (SOKE-N) SOKEN KAGAKU KK  
CYC 1  
PI JP 2004276492 A 20041007 (200472)\* JA 15[0]  
ADT JP 2004276492 A JP 2003-73123 20030318  
PRAI JP 2003-73123 20030318  
IPC B32B0027-18 [I,A]; B32B0027-18 [I,C]  
FCL B32B0027-18 F  
FTRM 4F100; 4F100/AA01.C; 4F100/AA19.C; 4F100/AA21.C; 4F100/AB03.A;  
4F100/AB04.A; 4F100/AB10.A; 4F100/AB31.A; 4F100/AD00.A; 4F100/AE01.A;  
4F100/AG00.A; 4F100/AK01.C; 4F100/AK12.C; 4F100/AK17.A; 4F100/AK17.C;  
4F100/AK25.C; 4F100/AK48.A; 4F100/AK48; 4F100/AL01.C; 4F100/AL05.C;  
4F100/AL06.C; 4F100/AP00.A; 4F100/AS00.C; 4F100/AT00.A; 4F100/BA03;  
4F100/BA07; 4F100/BA10.A; 4F100/CA20.C; 4F100/DC11.B;  
4F100/DC15.A; 4F100/DE01.C; 4F100/DG10.A; 4F100/DG11.A; 4F100/EH46.2;  
4F100/EH46; 4F100/EJ86.2; 4F100/EJ86; 4F100/GB08; 4F100/GB41; 4F100/GB71;  
4F100/GB90; 4F100/JB08.C; 4F100/JB09.C; 4F100/JK14; 4F100/JL09;  
4F100/JL10.A; 4F100/JN06.C; 4F100/JN28.A; 4F100/JN28.C; 4F100/YY00.C  
AB JP 2004276492 A UPAB: 20060122  
NOVELTY - A color sheet has color chromophore material sheet (A) having  
deep dig divisions, and particle form laminate (B) on smooth substrate  
sheet. Laminate (B) is manufactured by providing organic or inorganic  
ball-shaped particles of achromatic color inside divisions of sheet (A).  
The average particle diameter of particles is 100-500 nm. The color sheet  
exhibits chromatic light color as structure color by sense of vision.  
DETAILED DESCRIPTION - A color sheet has color chromophore material  
sheet (A) having deep dig divisions regularly arranged or distributed in  
irregular density in flat surface direction, on surface of smooth  
substrate sheet (C). A particle form laminate (B) is adhered on the sheet  
(C) with a resin binder. The laminate (B) is manufactured by providing  
organic or inorganic ball-shaped particles of achromatic color of gray,  
dark brown or black inside the divisions of sheet (A) and regularly  
adjusting by length and horizontal directions. The average particle  
diameter of particles shown with volume reference is 100-500 nm. When  
visible light wavelength region light is irradiated on the color sheet,

vertical reflected colored light exhibits chromatic light color as structure color by sense of vision.

USE - For internal equipment building materials, industrial material, decoration material, ornament, clothes and design material.

ADVANTAGE - The color sheet has excellent colorability, light resistance and weather proof property.

MC CPI: A12-B01; G02-A05; L03-D01

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AN 2004-276492 JAPIO

TI COLOR SHEET USING STRUCTURAL COLOR MEMBER

IN YOSHIDA TETSUYA; OKUDA YUKA; NAKAYAMA SHINICHI; TSUNODA YUKO; WATANABE JUNJI

PA SOKEN CHEM & ENG CO LTD

PI JP 2004276492 A 20041007 Heisei

AI JP 2003-73123 (JP2003073123 Heisei) 20030318

PRAI JP 2003-7312320030318

SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2004

IC ICM B32B27-18

AB PROBLEM TO BE SOLVED: To provide a color sheet wherein monodisperse spherical particles of a black achromatic color are formed like a sheet of a laminate-like matter and the color of a vertical reflected light thereof is felt visually as a structural color out of red (R), blue (B), green (G), yellow (Y) and other chromatic colors under the irradiation of a light in a visible light region.

SOLUTION: A color developing base material sheet having innumerable deep ditch divisions arranged regularly or irregularly is provided on a smooth ground sheet, and in these deep ditch divisions, the organic or inorganic monodisperse spherical particles, which are of the black achromatic color having no chromaticity and of which the average particle size on the volume basis is in the range of 100-500 nm, are coordinated regularly longitudinally and laterally and form a particle-form laminate. In the color sheet thus constituted, the particle-form laminate is engaged at least with a resin binder and joined to the top of the ground sheet, and on the surface of the particle-form laminate formed like the sheet, the color of the vertical reflected light felt visually under the irradiation of the light of the visible wavelength region presents the color of the chromatic light as the structural color.

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